

Note on "the Spanner," Captain Gadsden's Artificial Horizon for Sextants. By H. H. Turner, D.Sc., F.R.S., Savilian Professor.
(Plate 13.)

It seems desirable that the existence of an instrument which has been found to work in practice, and which is useful to a sailor in fog or at night, should be made widely known. I venture to emphasise the fact that the instrument has been found practically useful; for this point is essential. There have been many promising suggestions for such an instrument, which have failed on actual trial.

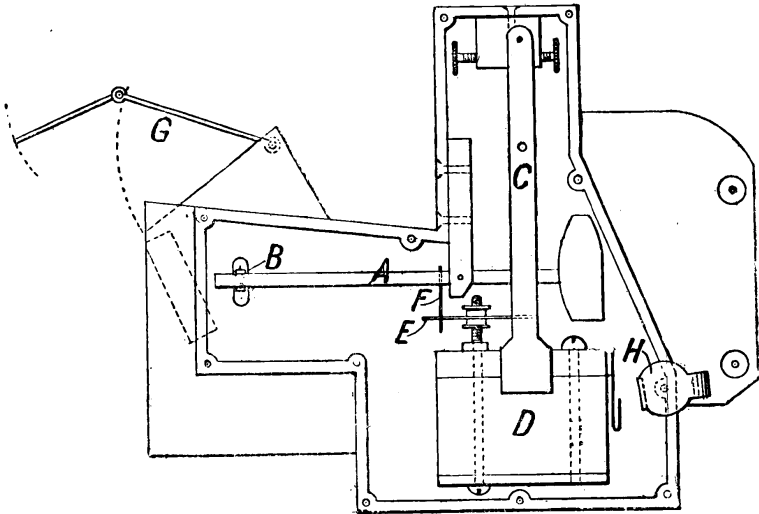
The apparatus is attached to an ordinary sextant, and is the invention of Captain H. A. Gadsden, of 6 Binden Road, Ravenscourt Park W., London, to whom I must refer those interested for further details. The subjoined figures (Plate 13) will explain its general nature. The instrument was exhibited to the Society at the April meeting.

An artificial horizon is provided, which consists of two bars that exactly span the periphery of the Sun's image in the horizon glass, and are maintained in horizontal position by means of a pendulum forming part of the attachment. This is shown in detail in Plate 13. At *A* is a pivoted balance beam which carries the horizon bars *B*, the latter extending through a slot in the casing. The pendulum comprises a pair of plates *C*, pivoted to a block at their upper ends, while their lower ends carry a heavy weight *D*. A plate *E* is secured to the weight *D*, and is formed with an opening through which extends a rod *F*, projecting from the beam *A*. The pendulum maintains its vertical position when the sextant is held in the hand, and by means of the rod *F* the horizon bars are kept at a proper horizontal level.

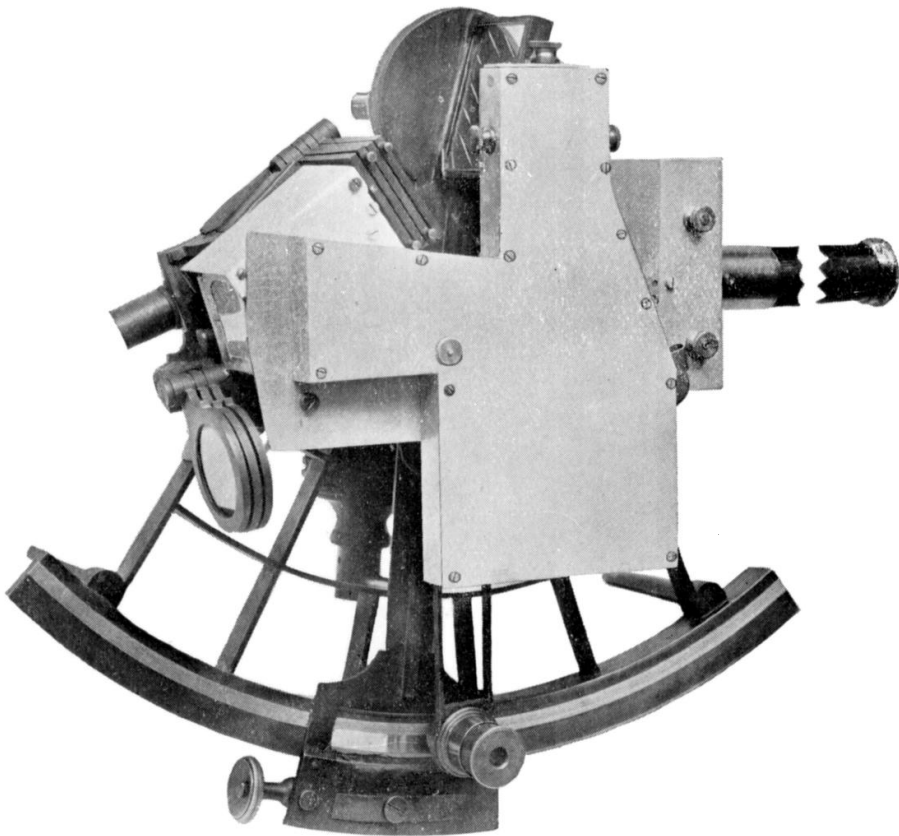
As the horizon bars are near the eye of an observer, the telescope of a sextant cannot be used. Observations are therefore made with a simple tube, longer than that usually supplied, so that the eye can be properly focussed on the bars.

If it is desired to use the sextant in the ordinary way, the spanner can be "locked" out of sight.

Captain Gadsden has also added to the sextant a stock of simple form (resembling a gunstock), which is put against the shoulder and helps to steady the instrument.



Details of the Pendulum attachment.



Sextant with Artificial horizon attachment.

Note on Father Stein's paper "On Dr. Roberts' method of determining the absolute dimensions of an Algol Variable Star."

By Alex. W. Roberts, D.Sc.

Professor Turner has kindly sent me in advance the main conclusions Father Stein has arrived at in his paper in *M.N.* (vol. lxviii. p. 490).

Through unaccountable error, I regarded the value of the light ratio as a maximum when the difference between the masses of the component stars was a minimum. It then, however, is zero.

Although in the case where the masses of the component stars are equal it is impossible to arrive at the absolute magnitude of a binary system, this is not the case where there is disparity between the masses, and I still have the hope that through careful determination of the quadrant points of a close binary orbit we may advance our knowledge in this direction.

[*Note by H. H. Turner.*—It should perhaps be made clear that the above note was written before Dr. Roberts had actually seen Father Stein's paper. On referring to his notes, he found at once the unfortunate slip above stated, and hastened to admit the correction without awaiting the paper itself. His promptness makes it possible to include this note in the present number of the *Notices.*]